



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/869,783	06/29/2001	Kazutoshi Kaji	1743/188	8575

26646 7590 08/08/2003

KENYON & KENYON
ONE BROADWAY
NEW YORK, NY 10004

EXAMINER

JOHNSTON, PHILLIP A

ART UNIT	PAPER NUMBER
----------	--------------

2881

DATE MAILED: 08/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/869,783

Applicant(s)

KAJI ET AL.

Examiner

Phillip A Johnston

Art Unit

2881

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 May 2003 and 20 May 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Detailed Action

Claims Rejection - 35 U.S. C.103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-10 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Taniguchi (823), in view of Krivanek (255).

Regarding Claim 1 (currently amended), Taniguchi (823) as applied above discloses a transmission electron microscope system equipped with an energy filter and capable of displaying a two-dimensional distribution map of element of concern on a real time basis. A transmission electron microscope incorporating an energy filter is equipped with a television camera for recording two types of energy-loss images in separate frame memories, respectively. For effecting background processing for image data, intensity of an image to be stored in one frame memory is attenuated with a constant ratio by an intensity regulating mechanism. A signal indicative of difference between the image data stored in the respective frame memories is outputted to a monitor as a picture signal. See Abstract.

Taniguchi (823) also discloses that, since the data inputting to the frame memories 11a and 11b is performed at a two-video-frame rate (2/30 second), the subtracted image is outputted onto the monitor 15 at every 2/20 second, which means that the two-dimensional map of elements of concern can be observed on a real-time basis. Accordingly, this method can equally be applied to a specimen, which changes continuously or deforms progressively as the time lapses. See Column 8, line 36-48.

Taniguchi (823) further discloses that a slow-scan CCD (charge coupled device) camera is utilized for observation of electron-microscopic images or in digital image processing because the slow-scan CCD camera has a greater number of pixels and wider dynamic range than the conventional television cameras. The exposure time for the CCD camera can arbitrarily be selected in a range from a fraction second to several seconds. When the slow-scan CCD camera is employed in carrying out the present invention, the processing described hereinbefore can be completed within several seconds at the longest even though the observation on the real-time basis as in the case of the conventional television camera is impossible. By equipping both the conventional television camera and the slow-scan CCD camera, it is possible to perform the adjustment or regulation, specimen location, optimal condition setting with the aid of the television camera while the slow-scan CCD camera is used for acquiring data to be saved. See Column 9, line 58-67; and Column 10, line 1-8.

Ex min rs Response to Arguments

3. Applicant's arguments filed 5-13-2003 and 5-20-2003 have been fully considered but they are not persuasive.

Argument 1.

Applicant states that "the Examiner interprets Taniguchi's transmission electron microscope (TEM) as being of the scanning type. The Examiner's understanding of Taniguchi is not correct. Taniguchi is directed to a nonscanning type of transmission electron microscope."

The applicant is respectfully directed to Column 6, line 49-54 in Krivanek (255), which states; Further, the electron beam could be deflected in a direction other than perpendicular to the dispersion direction, provided that the deflector power supply is made to deflect the beam very rapidly onto the active area of the detector, leave it stationary for a short time, and then very rapidly sweep it away.

The applicant is also respectfully directed to Column 8, line 42-48 in Taniguchi (823) where it is stated, Since the data inputting to the frame memories 11a and 11b is performed at a two-video-frame rate (2/30 second), the subtracted image is outputted onto the monitor 15 at every 2/20 second, which means that the two-dimensional map of elements of concern can be observed on a real-time basis. Accordingly, this method can equally be applied to a specimen which changes continuously or deforms progressively as the time lapses.

The examiner has interpreted from the Taniguchi (823), and Krivanek (255) references above that the Taniguchi (823), in view of Krivanek (255) method of observing elemental distribution applies to scanning transmission electron microscopes.

In addition, since independent Claim 1 lacks the scanning transmission electron microscope feature of dependent Claim 8, it was considered to be a secondary feature not critical to the operation of the invention.

Argument 2.

Applicant states that "In practice, Taniguchi requires about one hour for observation (two or more times of observation, each requiring 20 to 100 seconds, and an image processing period of 30 minutes to one hour)."

Applicant also states that "In contrast to this, the claimed invention is directed to a scanning transmission electron microscope (STEM), in which electron beam passed through the sample is accelerated by adjusting voltage of an acceleration tube built in an electron spectrograph, and the electron beam is scanned on the same in a form of small diameter probe. In the case of the scanning transmission electron microscope of the claimed invention, an element distribution image can be obtained by real time operation by simultaneously measuring electron beams of different energies. Thus, the claimed invention permits observation of element distribution images of high contrast within a period of about several seconds to 80 seconds. Furthermore, the claimed invention permits real time view field selection, switching of elements to be

Art Unit: 2881

observed and magnification selection, along with observing the element distribution image. That is, as now brought out in claim 1, the present invention operates in real time, something not possible with Taniguchi."

The applicant is respectfully directed to Column 8, line 42-48 in Taniguchi (823) where it is stated, Since the data inputting to the frame memories 11a and 11b is performed at a two-video-frame rate (2/30 second), the subtracted image is outputted onto the monitor 15 at every 2/20 second, which means that the two-dimensional map of elements of concern can be observed on a real-time basis.

The applicant is also respectfully directed to the Abstract in Taniguchi (823), which states; A transmission electron microscope system equipped with an energy filter and capable of displaying a two-dimensional distribution map of element of concern on a real time basis.

The applicant is further respectfully directed to Column 9, line 58-67; and Column 10, line 1-8, which states; As is known in the art, a slow-scan CCD (charge coupled device) camera is utilized for observation of electron-microscopic images or in digital image processing because the slow-scan CCD camera has a greater number of pixels and wider dynamic range than the conventional television cameras. The exposure time for the CCD camera can arbitrarily be selected in a range from a fraction of a second to several seconds. When the slow-scan CCD camera is employed in carrying out the present invention, the processing described hereinbefore can be completed within several seconds at the longest even though the observation on the

real-time basis as in the case of the conventional television camera is impossible. By equipping both the conventional television camera and the slow-scan CCD camera, it is possible to perform the adjustment or regulation, specimen location, optimal condition setting with the aid of the television camera while the slow-scan CCD camera is used for acquiring data to be saved.

The examiner has interpreted from the Taniguchi (823) references above that the Taniguchi (823) in view of Krivanek (255) invention operates within the same time domain as the applicants claimed invention and on a real-time basis equivalent to "detects in real time" as recited in amended Claim 1.

Conclusion

4. The Amendments filed on 5-13-2003 and 5-20-2003 under 37 CFR 1.131 have been considered but are ineffective to overcome the Taniguchi (823) and Krivanek (255) references.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

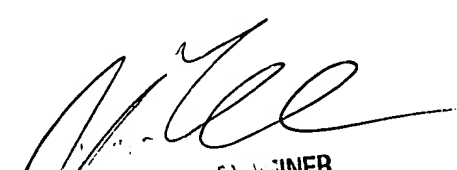
5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phillip A Johnston whose telephone number is 305 7022. The examiner can normally be reached on 7:30 to 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R Lee can be reached on 703 308 4116. The fax phone numbers for the organization where this application or proceeding is assigned are 703 872 9318 for regular communications and 703 872 9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308 0956.

PJ

July 29, 2003


SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800
JOHN R. LEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800